

window, one thing of which was a large Tree, whose trunk and top I could plainly discover, as I could also the parts of my window, and my hand and fingers, if I held it between the Window and the Object; a small draught of nineteen of which, as they appear'd in the bigger Magnifying-glass to reflect the Image of the two windows of my Chamber, are delineated in the third Figure of the 23. Scheme.

Fourthly, that these rows were so dispos'd, that there was no quarter visible from his head that there was not some of these *Hemispheres* directed against; so that a Fly may be truly said to have an eye every way, and to be really *circumspect*. And it was further observable, that that way where the trunk of his body did hinder his prospect backward, these *protuberances* were elevated, as it were, above the plain of his shoulders and back, so that he was able to see backwards also over his back.

Fifthly, in living Flies, I have observ'd, that when any small mote or dust, which flies up and down the air, chances to light upon any part of these knobs, as it is sure to stick firmly to it and not fall, though through the *Microscope* it appears like a large stone or stick (which one would admire, especially since it is no ways probable that there is any wet or glutinous matter upon these *Hemispheres*, but I hope I shall render the reason in another place) so the Fly presently makes use of his two fore-feet in stead of eye-lids, with which, as with two Brooms or Brushes, they being all bestuck with Bristles, he often sweeps or brushes off what ever hinders the prospect of any of his *Hemispheres*, and then, to free his legs from that dirt, he rubs them one against another, the pointed Bristles or Tenters of which looking both one way, the rubbing of them to and fro one against another, does cleanse them in the same manner as I have observ'd those that Card Wool, to cleanse their Cards, by placing their Cards, so as the teeth of both look the same way, and then rubbing them one against another. In the very same manner do they brush and cleanse their bodies and wings, as I shall by and by shew; other creatures have other contrivances for the cleansing and clearing their eyes.

Sixthly, that the number of the Pearls or *Hemispheres* in the clusters of this Fly, was near 14000. which I judged by numbering certain rows of them several ways, and casting up the whole content, accounting each cluster to contain about seven thousand Pearls, three thousand of which were of a size, and consequently the rows not so thick, and the four thousand I accounted to be the number of the smaller Pearls next the feet and *proboscis*. Other Animals I observ'd to have yet a greater number, as the *Dragon-Fly* or *Adderbolt*: And others to have a much less company, as an *Ant*, &c. and several other small Flies and Insects.

Seventhly, that the order of these eyes or *Hemispheres* was altogether curious and admirable, they being plac'd in all kind of Flies, and aerial animals, in a most curious and regular ordination of triangular rows, in which order they are rang'd the neerest together that possibly they can, and consequently leave the least pits or trenches between them. But in *Shrimps*, *Crawfishes*, *Lobsters*, and such kinds of *Crustaceous* water Animals, I have yet

yet observ'd them rang'd in a quadrangular order, together at right angles, which as it admits of a less number of surfaces; so have those creatures a recompence made to their eyes a little movable in their heads, which I want. So infinitely wise and provident do we find all Nature, that certainly *Epicurus*, and his followers, consider'd them, who ascrib'd those things to the power that will, to a more attentive considerer, appear the power of Wisdom and Providence.

Upon the Anatomy or Dissection of the Head, particulars:

First, that this outward skin, like the *Cornea* of the Animals, was both flexible and transparent, and seem'd through the *Microscope*, perfectly to resemble the very substance of an eye; for having cut out the cluster, and remov'd the stuff that is subjacent to it, I could see it transparent skin, having as many cavities in the inside of it, and in the same order as it had *protuberances* on the outside, and this was the same in all the Animals that had it, whether Flies or *Shrimps*.

Secondly, I found that all Animals that I have observ'd of eyes, have within this *Cornea*, a certain clear liquor, or a very little quantity, and,

I observ'd thirdly, that within that clear liquor, there was a dark *mucons* lining, which was all spread round with a cluster, and seem'd very neer adjoining to it, the colour of some Flies, was grey; in others, black; in others red; in others, spotted; and that the whole cluster was of the same colour, whether the Animal was living, or but newly kill'd, and that the colour that this coat (as I may so call it) appear'd of, was the same as the skin, or *Cornea*, was remov'd.

Fourthly, that the rest of the capacity of the cluster was in *Dragon Flies*, &c. hollow, or empty; in others full of substance; in blue Flies, with a reddish muscous substance, tending from the center or bottom outwards; and differing in various and differing kinds of substances.

That this curious contrivance is the organ of sight in *Crustaceous* Animals, which are furnish'd with it, I have no doubt, if we consider but the several congruities it has to the greater creatures.

As first, that it is furnish'd with a *Cornea*, with a transparent skin, with a *uvea* or *retina*, that the Figure of each of the spheres is very spherical, exactly polish'd, and most vivid, live when the Animal is living, as in greater Animals, and in like manner, and irregular, or shrunk, when the Animal is dead.

Next, that those creatures that are furnish'd with these other organs that have any resemblance to the knowledge of the greater creatures.